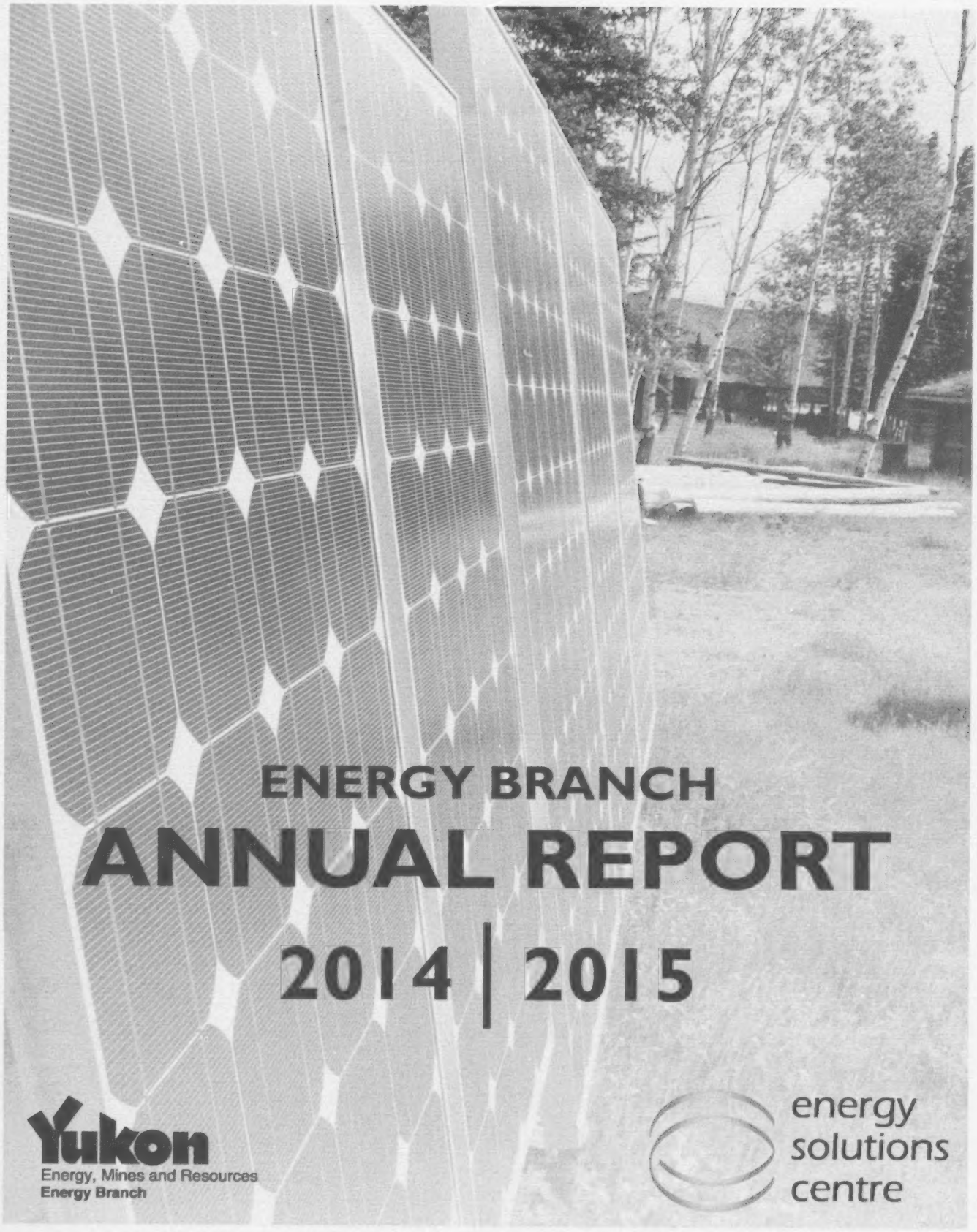

ENERGY BRANCH
ANNUAL REPORT
2014 | 2015

Yukon
Energy, Mines and Resources
Energy Branch

energy solutions centre

PV Array, Old Crow Arctic Research Facility
Photo: Government of Yukon

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Cover Photo:
PV Array, Fort Selkirk
Photo: Government of Yukon

MESSAGE FROM THE DIRECTOR

Thank you for your interest in the Energy branch's recent accomplishments and activities. I am pleased to issue the annual report for our 2014/2015 fiscal year. This was a busy year for us. It was also a time of change, at least in name. Before this year we were known exclusively as the Energy Solutions Centre (ESC). This year we are pleased to launch ourselves as the Energy branch, acknowledging our formal position in Yukon government, and our evolving role in facilitating the energy future of Yukon. We will also retain the ESC banner, and through our storefront work directly with the public.

I am also proud to announce a number of new initiatives for the Energy branch, including the new Micro-generation Incentive, and the launch of our expanded Good Energy Program. The Micro-generation Incentive is the result of the policy of the same name and enables individuals to connect renewable generation systems to the grid. Compensation for renewable energy surpluses at a set kilowatt/hour rate has been a long-standing objective of our staff.

The Good Energy Program, which provides incentives for EnergyStar® certified upgrades to old heating and home appliances, is now complemented by the newly-minted Residential Energy Incentives Program. The Residential Energy Incentives Program targets energy efficiency improvements through renovations. It includes window and door replacement, insulation upgrades, air sealing improvements and heat recovery ventilator (HRV) installations. We also offer a substantial $10,000 rebate for new homes rated to an EnerGuide 85 rating or better. These programs address the government priority of increasing energy efficiency in Yukon by 20 per cent by 2020.

Our staff members possess the technical expertise, field knowledge, and an ethos firmly rooted in improving how Yukon residents can effectively generate, store, and consume energy. We will continue to lead the development of energy policies and programs and to continue our work in furthering clean and responsible energy use for Yukon.

Shane Andre
Director, Energy Branch
Department of Energy, Mines and Resources
Government of Yukon

THE ENERGY BRANCH

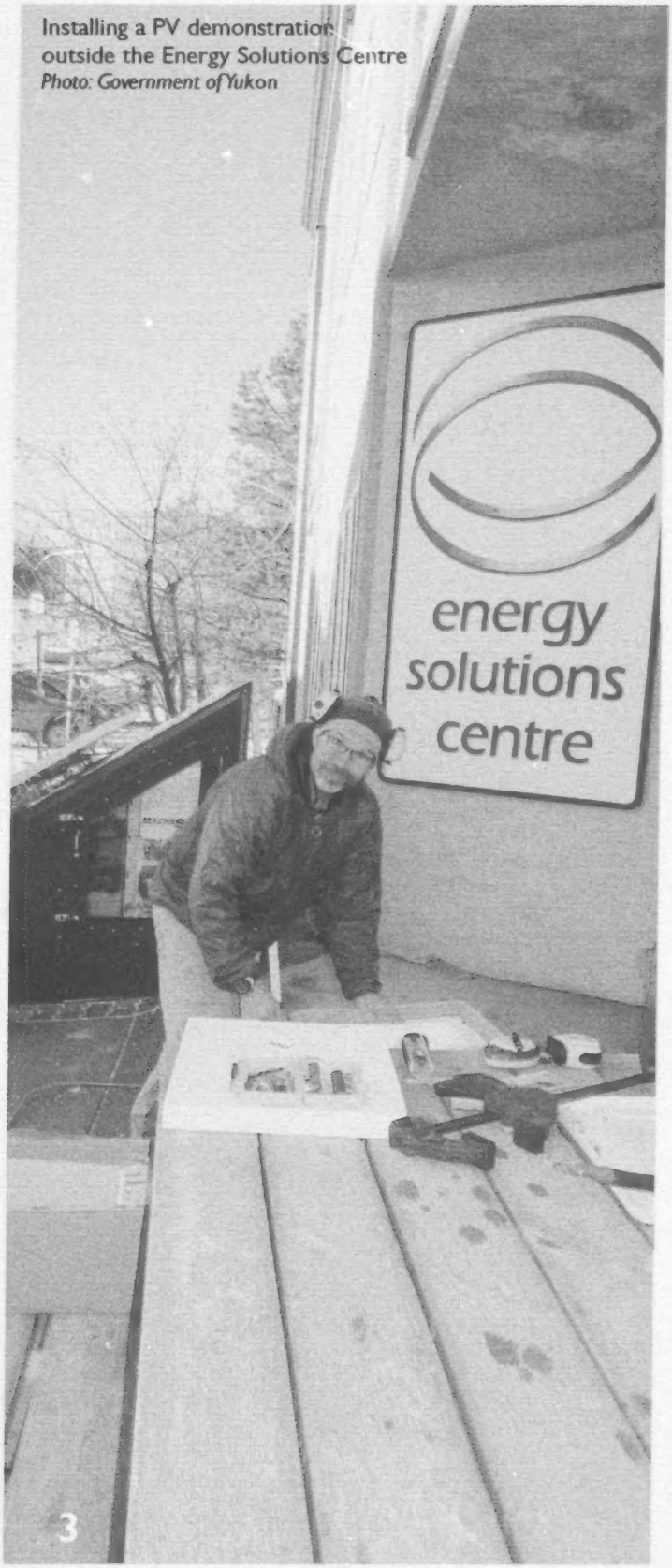
Our Services

- Deliver programs that provide technical information and financial rebates to encourage the Yukon public to use the most energy efficient household appliances and heating systems;
- Conduct projects to improve energy efficiency and the adoption of more forms of renewable energy;
- Provide training to build capacity in the trades sector to provide sales, installation, and support for energy efficient technologies and processes;
- Participate in outreach and public education initiatives that inform the Yukon public about the health, safety, economic and environmental benefits of energy efficiency and renewable energy; and
- Work with federal, territorial, First Nation, provincial and municipal government organizations to deliver energy programs to Yukon residents.

Our Mandate

Facilitate the coordinated, effective, and collaborative delivery of energy policy, projects, and programs, to promote a secure and sustainable Yukon energy sector.

ENERGY SOLUTIONS CENTRE



Installing a PV demonstration outside the Energy Solutions Centre
Photo: Government of Yukon

OUR STAFF

Shane Andre
Director

Bob Collins
Senior Energy Planner

Cathy Cottrell
Senior Energy Planner

Jessica Garstin
Office Coordinator

Ryan Hennessey
Senior Energy Planner

Sean MacKinnon
Senior Energy Advisor

Doug MacLean
Technical Consultant

James Wigmore
Senior Energy Advisor

STRATEGIC DIRECTION

The Energy branch is a part of Yukon government's Department of Energy, Mines and Resources. The Energy Solutions Centre is our storefront from which we promote energy efficiency through the Good Energy Program and provide information to the public. We are a front line public service centre providing a range of services to our of clients, including Yukon citizens, other government departments, First Nations, municipalities and businesses.

At the outset of 2014 we identified five key areas of operations that have defined the branch's activities over the past year:

1. Energy Efficiency/Demand Side Management Projects

Energy efficiency initiatives are understood by energy experts to be the most cost effective and valuable means of meeting community energy needs. For that reason, these projects typically make up the significant focus of our efforts. This year we focused on:

- Delivering quality energy efficiency programs to the Yukon public.
- Providing energy efficiency information and products targeting renters.

2. Energy Education and Engagement Projects

Raising energy literacy levels and building energy expertise and capacity within Yukon's commercial sector is imperative to managing energy consumption and promoting a secure energy sector. This year we focused on:

- Providing training opportunities to local contractors.
- Engaging the public through educational materials and a strong community presence.
- Tracking energy use in schools to educate students in energy conservation.

3. Energy Research Projects

Research is essential for evaluating new energy technologies and their performance in Yukon's northern setting. This year, through partnerships with the State of Alaska, the Yukon Research Centre, and the Yukon Housing Corporation, we focused on:

- Completing pilot studies to test the feasibility of emerging technologies.
- Delivering programming in support of renewable energy resource development.
- Investigating the feasibility of energy transmission opportunities in the Southern Yukon.

4. Energy Policy

The Energy branch provides an increasingly important role in the development and implementation of Yukon government energy policy. This year we focused on:

- Leading the Energy Strategy Implementation.
- Implementing the Micro-generation Policy.
- Leading the development of the Independent Power Producer Policy and Bioenergy Strategy.

5. Interdepartmental Coordination and Branch Operations

Every year we work to complete a number of administrative tasks necessary to delivering our projects and programs. This work includes:

- Participating in internal working groups.
- Fulfilling our responsibilities under the Yukon Environmental and Socio-economic Assessment Act.
- Fulfilling public information requests.

Each goal is important to meet the mandate of our organization. By reporting on these activities we are establishing benchmarks from which to evaluate our success, demonstrate to the public how we've grown over the past year, and show how we are responding to Yukon's changing energy picture.

Building a SuperGreen 20-plex in Dawson City
Photo: Yukon Housing Corporation

PERFORMANCE REPORT

The following projects and programs have been selected to showcase the work we have completed to meet our strategic directions.

For every project noted, many others have been initiated or are underway. We also provide support to our partners in Yukon and in other jurisdictions. To date we have not established indicators that suggest the scope of this "behind-the-scenes" activity in our performance reporting. So much of this work goes unreported. However, we are working to carefully identify success indicators that better demonstrate our work, and these will feature in future annual reports from the branch.

PV Array, Whitehorse
Photo: Government of Yukon

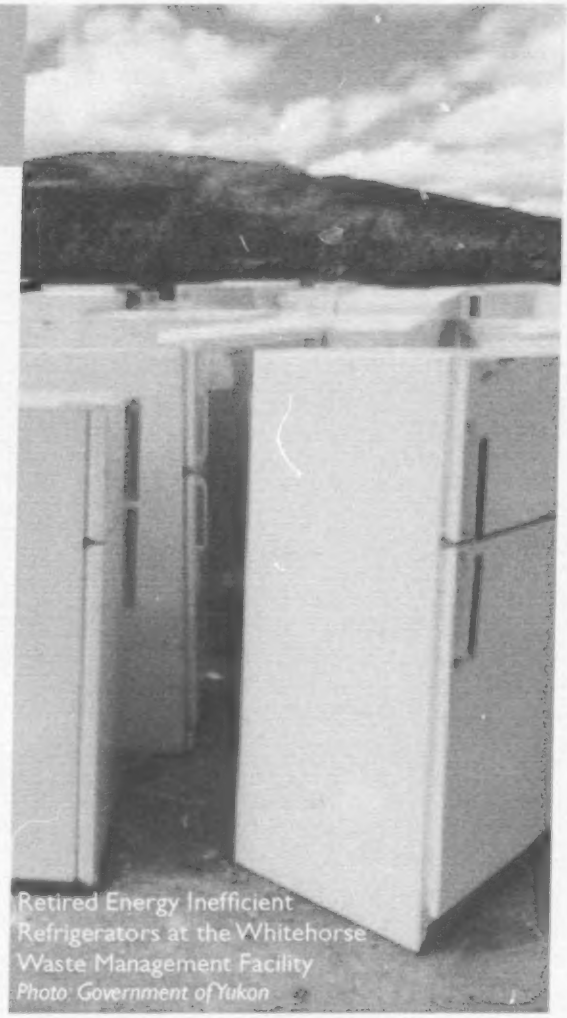
Energy Efficiency/Demand Side Management Projects

THE GOOD ENERGY PROGRAM

Every year we provide homeowners with rebates for a range of energy efficiency improvements, for appliances, heating systems, water systems and home construction. People from all of Yukon's communities participate in the program and over 9,500 rebates have been issued to 6,600 clients since 2001. As demonstrated in the graph below, participation in the program has increased every year since its inception.

Controlling home energy consumption is fundamental to managing the impact of high energy prices, responding to environmental concerns, and managing Yukon's future energy needs. Over the past nine years the Good Energy Program has resulted in a cumulative cost savings of $15,300,000 and the displacement of 29,000 tonnes CO_2e (equivalent carbon dioxide).

This year we proudly launched the Residential Energy Incentive Program as an addition to the Good Energy Program.

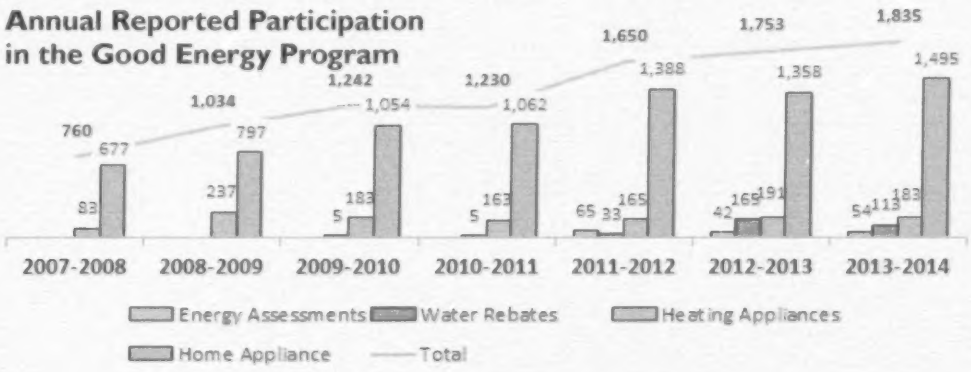


Retired Energy Inefficient Refrigerators at the Whitehorse Waste Management Facility
Photo: Government of Yukon

This new program offers the public a means to optimize the energy efficiency of new and existing homes. In total, nine new products qualify under the Residential Energy Incentives Program: heat-recovery ventilators; EnergyStar® windows and doors; and solar, wind, hydro, biomass or geothermal electrical generators.

The Good Energy Program is ably led by Shane, James, Sean, and Jessica, who will continue to work with the public next year to offer high quality incentives to support improved efficiency in Yukon homes. All of the different incentive programs under the Good Energy brand can be found online at: **www.goodenergyyukon.ca.**

Annual Reported Participation in the Good Energy Program



Energy Efficiency/Demand Side Management Projects

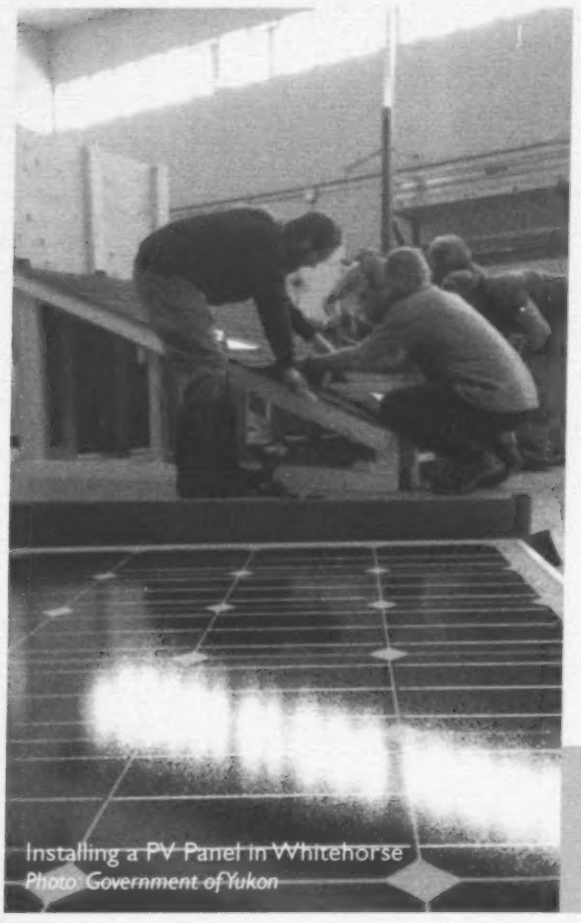
QUICK START HOME ENERGY KITS

This year we launched our Quick Start Home Energy kits to help decrease energy costs for Yukon residents living in rental properties. Each kit contains 12 items that decrease energy consumption costs. These include:

- CFL light bulb;
- LED night light;
- Kitchen faucet tap aerator;
- Fridge/freezer thermometer;
- Hot water gauge;
- Window film;
- Teflon tape;
- Shower timer;
- Electrical outlet gaskets;
- Water saving showerhead; and
- Weather stripping.

The Quick Start Kit
Photo: Government of Yukon

The program builds on the successful pilot that James implemented in 2013. Approximately 100 kits were distributed through this pilot, either picked-up in person, or mailed out to the Yukon's rural communities.



Installing a PV Panel in Whitehorse
Photo: Government of Yukon

Energy Education and Engagement

SOLAR PV INSTALLATION TRAINING

In September 2014, the Energy branch offered the Canadian Solar Institute's five-day Solar PV Installation Training Workshop for a second time. The workshop helped us achieve our objective of offering effective energy education and engagement programs to the public. The workshop provided the theoretical and technical knowledge needed to design and install both off-grid and grid-tie solar PV systems to 11 Yukon students.

The Energy branch frequently offers training on topics such as energy efficient building techniques, electric vehicle conversion, lighting upgrades and solar electric (also called Photovoltaic) design and installation.

Energy Education and Engagement

ENERGY MONITORING IN SCHOOLS

Inspecting the boilers at Porter Creek Secondary School in Whitehorse
Photo: Government of Yukon

We are developing tools for students to learn about energy through an ongoing partnership with Yukon government's department of Education and the Yukon Energy Corporation. These tools educate youth about energy issues, what energy problems exist, and how solutions are literally at their fingertips. Youth engagement and leadership is imperative to making progress on Yukon's energy challenges over the long-term.

Last year James continued his work to find host schools, install data loggers, develop the software to visually depict collected data, and install interactive dashboards for use by students.

Energy Education and Engagement

COMMUNITY ENERGY PLANNING

Since 2013 our staff has collaborated with Yukon municipalities and First Nations to manage the cost of energy at the community scale. This work builds on clear direction provided by Yukon communities in 2011 to the Yukon Energy Corporation and to Yukon government's department of Community Services. We are proud to deliver this service and foster energy savings and greenhouse gas reductions across Yukon. Our program includes project design, baseline energy and cost assessments, consumption and cost projections, community engagement, and planning.

In the winter of 2013 the Yukon government released the Faro Energy Plan in collaboration with the Town of Faro. In 2014, Ryan worked with Vuntut Gwitchin First Nation to deliver energy planning to Old Crow. The Energy branch also worked with Yukon First Nations, municipalities and societies to articulate Yukon energy planning needs. These needs establish a foundation for us to develop better planning resources that meet the needs of Yukon.

The community of Faro
Photo: Town of Faro

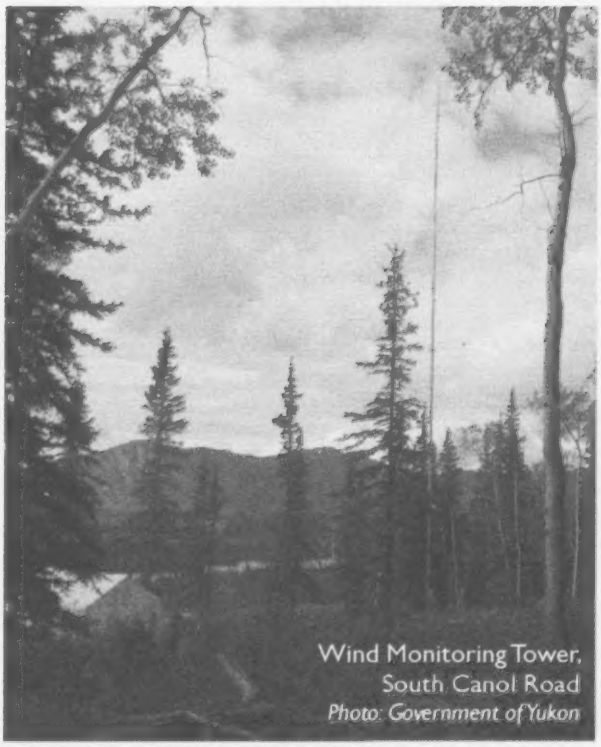
Energy Research Projects

WIND PROSPECTING SERVICE

Every year Cathy works with clients to determine if the wind resource at their location is sufficient to justify the significant investment required to purchase generation equipment. Now in its fifth year, the service typically works with two off-grid clients per year, and to understand the seasonality of the wind resource at their location.

The service demonstrates energy conservation to minimize electric loads, optimization of off-grid generating systems, and proper battery maintenance.

The service has also enabled us to evaluate the variability of wind energy between sites in Yukon. Understanding this variability is critical for downscaling the small scale wind mapping that is available at the territorial level.



Wind Monitoring Tower, South Canol Road
Photo: Government of Yukon

Vacuum Insulated Panels (grey panels below)
Photo: Government of Yukon

Energy Research Projects

VACUUM INSULATED PANELS

Every year we partner with the Yukon Research Centre, the Yukon Housing Corporation, and others to pilot new technologies in buildings and other infrastructure. This year, in collaboration with the Champagne and Aishihik First Nations, Doug installed and tested the performance of vacuum insulated panels in a home in Haines Junction.

Vacuum Insulated Panels improve insulation values without the bulk of more conventional batten or foam insulations. The resulting thinner walls make insulation less costly and increases available floor space. For example, 16m^2 in additional usable space can be worth $25,000 to 35,000 on the housing market! The pilot study evaluates how the panels perform in Yukon's cold climate while also studying their cost and durability.

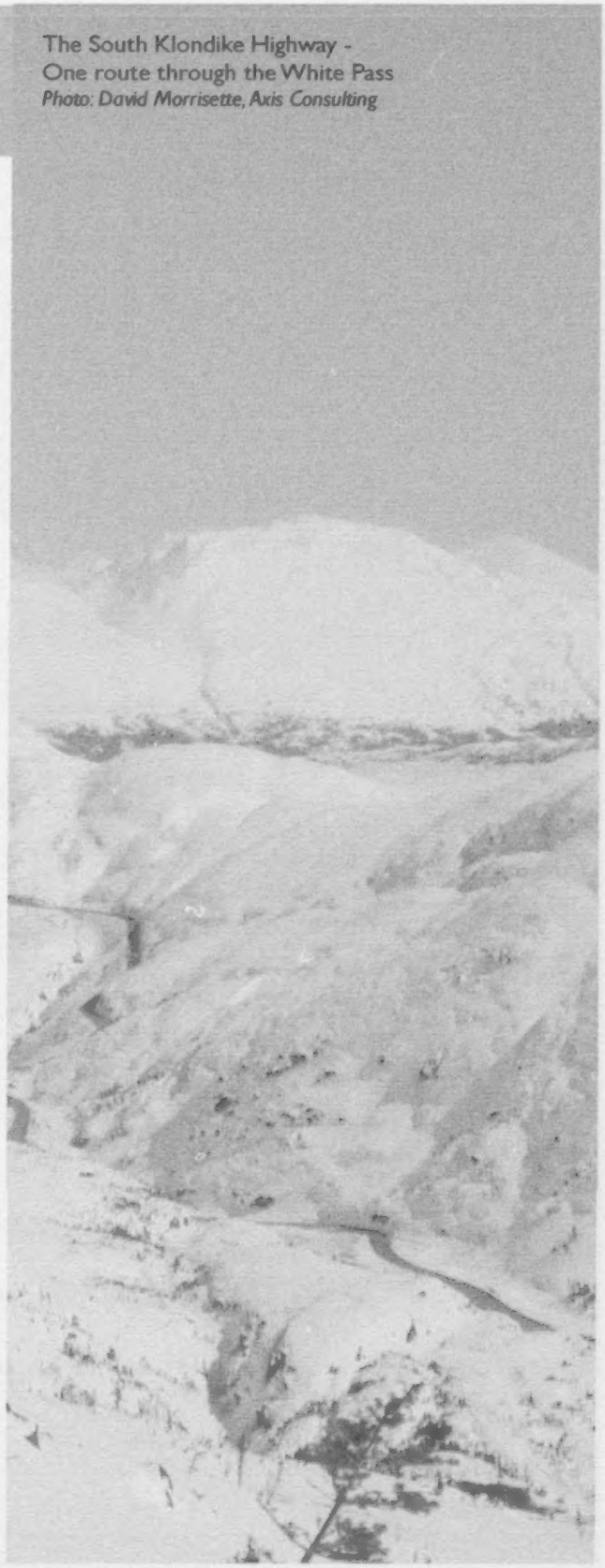
Energy Research Projects

VIABILITY OF A SOUTHEAST ALASKA AND YUKON ECONOMIC DEVELOPMENT CORRIDOR

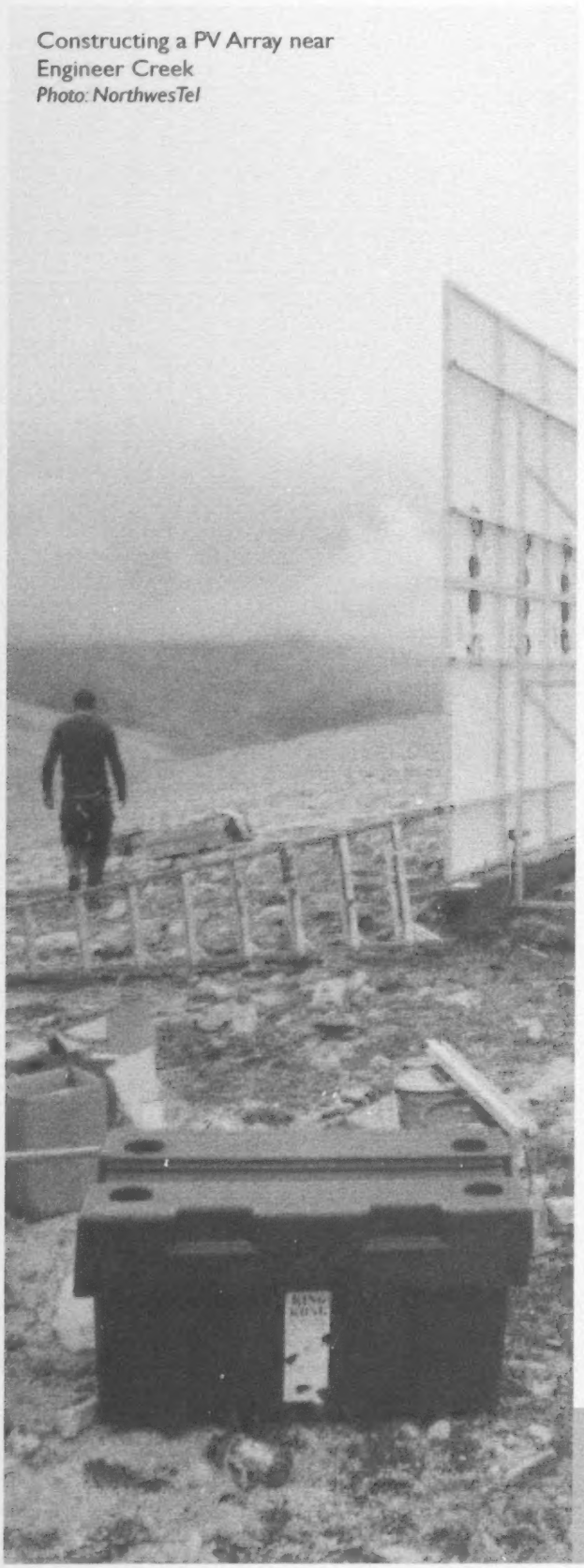
The Energy Branch led a special assessment commissioned by the Government of Yukon and the State of Alaska to investigate the viability of establishing an economic development corridor between Skagway, Alaska and Whitehorse, Yukon. The project builds on a number of existing investigations, including the Yukon government's department of Economic Development's feasibility study to expanding Yukon's telecommunications capabilities, and Alaska Power and Telephone's research related to potential hydro-generating resources located near Skagway.

Over the course of 2014, we worked with contractors to evaluate the technical requirements and the cost of building a transmission connection to Skagway. The primary benefits of such a transmission corridor include reduced reliance on diesel to meet Yukon's winter electricity demand and improved air quality in summer months if cruise ships in Skagway used hydro rather than diesel while idling in port. We formed a working group representing those First Nations, municipalities, businesses, and utilities that could benefit from the project.

The development of this economic corridor is a result of the partnership created under the Alaska- Yukon Intergovernmental Relations Accord signed in June 2011.



The South Klondike Highway - One route through the White Pass
Photo: David Morrisette, Axis Consulting



Constructing a PV Array near Engineer Creek
Photo: NorthwesTel

Energy Policy

ENERGY STRATEGY PROGRESS

Implementing the 2009 Energy Strategy for Yukon is the Energy branch's primary purpose. The Strategy identifies opportunities to increase Yukon's energy production from renewable sources while reducing fossil fuel use and greenhouse gas emissions. It also acknowledges the place of renewable energy as a contributor to economic development and employment opportunities for Yukon communities.

This year the Energy branch focused on developing a new progress report. This work includes data collection and ensuring our identified indicators accurately depict our progress to meet the objectives of the strategy.

This progress report will be issued next year.

Energy Policy

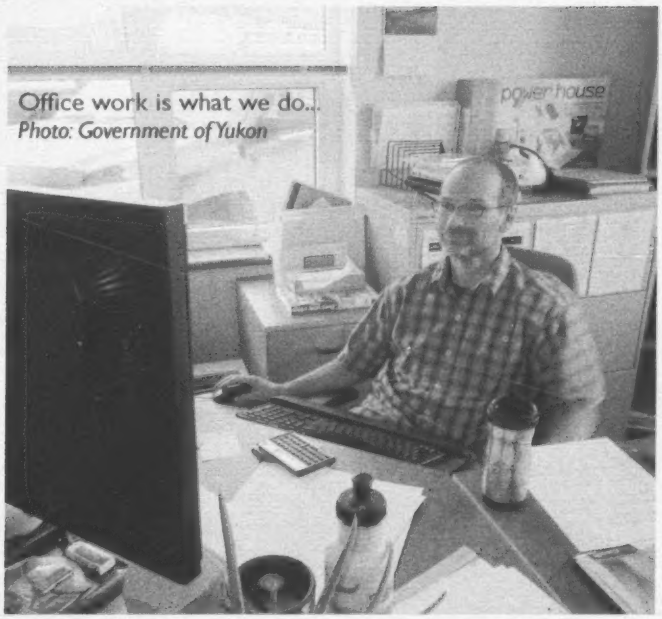
INDEPENDENT POWER PRODUCTION

The Independent Power Production policy will provide opportunities for organizations that are not considered utilities to generate renewable energy and assist Yukon's utilities to meet the ever-increasing demand for affordable, reliable and clean electricity. A draft policy, was released for public consultation in early 2014.

At the end of this year the branch was working to complete a "What we heard" report synthesizing the feedback we received through public consultation. We continue to work closely with Yukon First Nations and Yukon's utilities (Yukon Energy Corporation and ATCO Electric Yukon) to better understand their positions on independent power production and ensure their interests are addressed.

Energy Policy

MICRO-GENERATION INCENTIVE



Office work is what we do...
Photo: Government of Yukon

The Micro-generation Policy was approved and adopted in 2013. Growing out of an initiative referred to as net metering, the Micro-generation Policy enables individuals to connect their renewable electrical generation systems to the grid. Participants from either hydro or diesel-dependent communities will receive financial payment for surplus electricity sold to Yukon's utilities (Yukon Energy Corporation and ATCO Electric Yukon).

Over this year, Sean has worked with contractors and residents to interpret the policy and design an incentive that meets the needs of home-owners and contractors. By March 2015 ten new clients had successfully registered and another 40 have expressed interest in the program!

Energy Solutions Centre Services and Operations

SERVICES TO THE PUBLIC

Providing services to the public is what we do. Responding to information requests, and providing technical support is the foundation on which the Energy Solutions Centre was established. Every day our Energy Advisors provide information on home energy technologies through consultations arranged at our storefront.

We respond to approximately 100 information requests from Yukon residents monthly on topics relating to heat, electricity, building science, our programs, and more!

...while we serve the public.
Photo: Government of Yukon

OUR FOCUS FOR 2015-2016

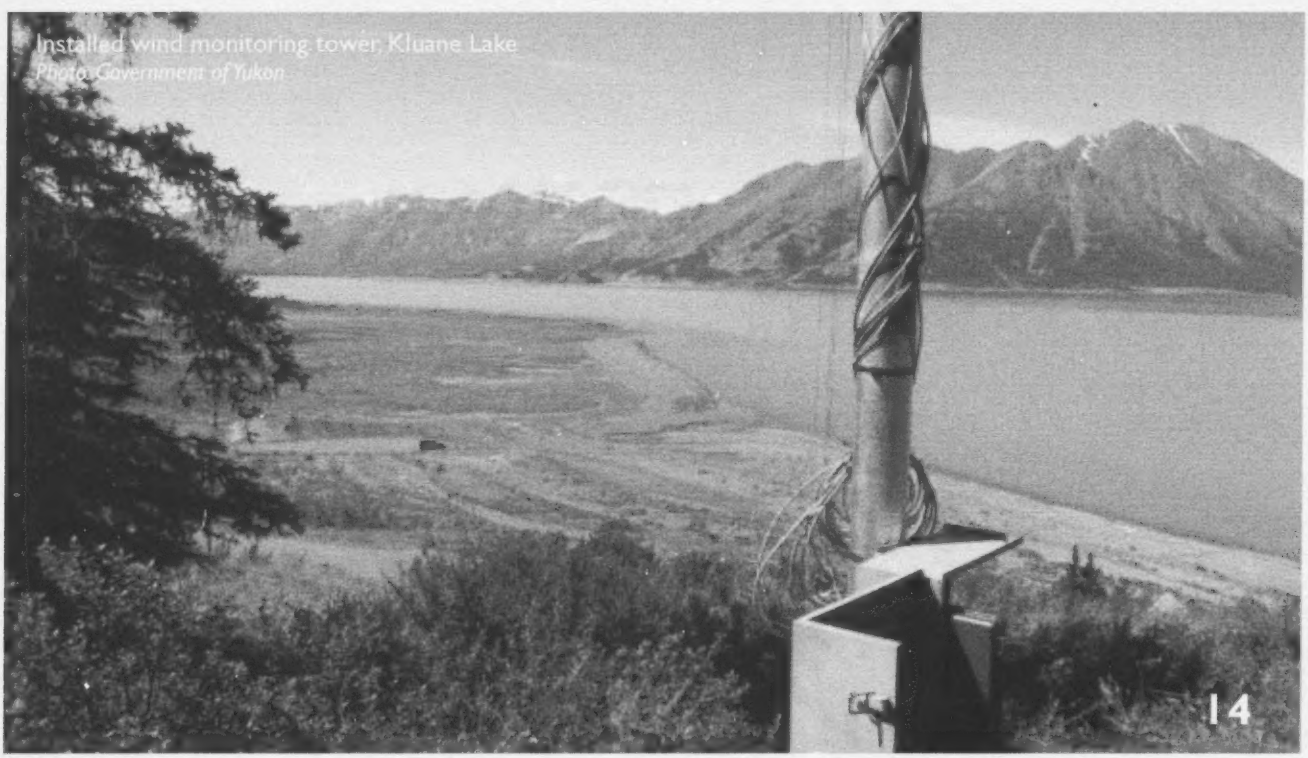
Our five focus areas will continue to define our activities in the coming year. Examples of this upcoming work include the continued expansion of the Good Energy Program, the development of a Yukon Renewable Resource Atlas, and our investigations into Yukon's potential geothermal energy opportunities.

This year we have established three new key objectives to ensure we deliver our mandate:

1. Continue the successful implementation of our new programing focused on improving the efficiency of Yukon buildings.
2. Continue the implementation of the 2009 Energy Strategy for Yukon including the development and implementation of: the Yukon Biomass Energy Strategy and Independent Power Production Policy.
3. Work to establish the Energy Branch as the authority and the source of choice for technical information related to energy in the territory.

We will look forward to reporting on our progress next year. In the meantime, should you have any questions, feel free to contact us at:

Energy Branch
Energy, Mines and Resources
Government of Yukon
Phone: 867-393-7063
E-mail: energy@gov.yk.ca



Installed wind monitoring tower, Kluane Lake
Photo: Government of Yukon